

'We find that the school with the most dosers is not always the school with the most wheezers; the school with potentially the most undosed wheezers may be neither of these.'

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A look at the wheezers and dosers

At its worst, asthma can kill — at best, when well-controlled, it is still a nuisance. About one in seven young people is a diagnosed asthmatic, and the frequency seems to have increased over the past generation. Public awareness of asthma prevalence and possible contributory factors has been raised by the efforts of the National Asthma Campaign and the National Asthma Training Centre, as well as other agencies; but considering how common it is, it still carries a surprising degree of stigma. Perhaps this is a hangover from the time when it was widely considered to be a nervous complaint curable by the sufferer's own efforts.

This stigma may contribute to a number of undesirable consequences:

- Many youngsters do not want to be seen taking their prescribed medication.
- They may try to avoid taking it anyway, believing that if they can get along without it, their condition must be clearing up.
- They may try to hide their condition from their friends or even from their parents.

This third factor, added to genuine unawareness in the case of some youngsters, probably leads to a substantial under-diagnosis of the condition. Parents may conspire in this denial.

Collecting data about asthma and asthma symptoms

Most of the Unit's work is concerned with the promotion of survey methods among Health Authorities and schools, so that they get a clearer

picture of what is going on locally and can then plan and act on the basis of objective information. Our best-known survey is the Health Related Behaviour Questionnaire, now in its sixteenth version, which has been completed by over 300,000 pupils in numerous surveys across the country over the last 15 years. Each year we compile and report the aggregate data, our last publication being *Young People in 1993* (1).

Some time ago we were approached by a paediatrician to include some questions related to asthma in our surveys. We have since done so, and in addition have designed a 'workshop' activity booklet (2) to help teachers examine and reflect upon the data from their survey. We currently ask two questions:

- *On how many days have you taken any medication for asthma in the last week?*
- *When you run, do you 'wheeze' and have trouble breathing (not just feel out of breath)?*

Let us call those who report any days at all for the first question the *dosers*, and those who reply 'quite often' or 'very often' to the second question the *wheezers*.

From our *Young People in 1993* report we can draw the following figures:

BOYS (11–16)	GIRLS (11–16)
14,555 (100%)	14,213 (100%)

These numbers exclude 418 pupils in the surveys whose reply to one or both of these questions was missing or uncodable. Taking

There is almost certainly a substantial under-diagnosis of asthma sufferers.

these samples as the base (100%), what percentages of these boys and girls are wheezers or dosers?

	BOYS	GIRLS
Dosers	12%	10%
Wheezers	16%	20%

Now, clearly the wheezers and dosers overlap to some extent.

	BOYS	GIRLS
No wheeze, no dose	79%	77%
No wheeze, doser	5%	3%
Wheezer, doser	7%	8%
Wheezer, no dose	10%	13%
	100%	100%

From the last line we can see that there are fair numbers of children that reported some breathing difficulty and did not medicate last week. A natural interpretation of these data is to say that these unmedicated wheezers are in fact likely to be untreated asthmatics whose quality of life may well be improved by referral. [We might also label the 'wheezing dosers' as 'children with asthma that is not being fully controlled', and the 'non-wheezing dosers' as 'well-managed asthmatic children'.] Another way of looking at these data is to ask: what proportion of the wheezers are in fact dosing? (The answer is 39%, compared with 11% of dosers in the whole sample.)

	BOYS	GIRLS
All wheezers	2348	2897
Wheezer and doser	41%	37%
Wheezer, no dose	59%	63%
	100%	100%

We see a majority of wheezers without medication. This is probably a familiar story, even if the method of deriving the result is new to some.

Once in possession of this information about confirmed and potential asthma sufferers, the next step is to examine them in the context of school and home.

Dosers and wheezers in schools

Recently we have looked at the rates of wheezing and dosing in different schools in a single district. We find that the school with the most dosers is not always the school with the most wheezers; the school with potentially the

most undosed wheezers may be neither of these.

This unevenness is very interesting (note schools 2 and 5!), and suggests a strategy for targeting schools for screening programmes.

School	Medi-cators	Wheez-ers	Differ-ence
No. 1	9%	22%	13%
No. 2	11	27	16
No. 3	9	18	9
No. 4	10	21	11
No. 5	19	22	3
No. 6	11	17	6
No. 7	11	17	6
No. 8	10	14	4
No. 9	13	17	4
No. 10	7	18	11
No. 11	7	16	9
No. 12	13	22	9

Asthma and lifestyle

The Health Related Behaviour databank covers a very wide spectrum of young people's activities, and gives us a unique chance of matching asthma parameters with other 'lifestyle' variables. In other words, are asthmatic youngsters tending to make different choices because of their condition?

We looked first at the dosers — youngsters that had taken asthma medication during the previous week — selecting a number of lifestyle variables that offered a potential link. The sample studied by us was the 9534 boys and 8886 girls in Years 8 and 10 that completed the questionnaire in 1993.

We selected eleven health-related behaviour aspects that seemed likely to show asthma-related effects. They are listed in Tables 1 and 2.

For each aspect, the pairs of figures under each of the four sex/year combinations were examined, and any instances where the no medication/medication percentages were consistently different in the same direction were noted. As an example, the 'going to discos or parties' aspect is presented in Table 3. Reading across the first row of figures, we see that for all four groups the proportion that went during the previous week is higher for the dosers. The same is true for people that went in the last 2 weeks, but the opposite is true for those who had not been in the last 6 months. These trends are summarised in Table 1, item 11.

Table 1. A study of Year 8 and 10 boys and girls in our 1993 Health Related Behaviour database. The table shows if all four groups showed a similar trend with respect to medication or non-medication and an aspect of their lifestyle listed here.

Note that a 'small town' (aspect 1) has a population of less than 100,000.

Aspect	Trend towards MEDICATORS 'DOSERS'	Trend towards NON-MEDICATORS 'NON-DOSERS'
1. Home location	Centre of small town	Centre of large town
2. Ethnic group	UK & European	Asian
3. Parents at home	No trend found	No trend found
4. After-school activities	Looked after pet Played musical instrument	No trend found
5. Paid work		Manual work Paper or milk round
6. Spending money	Alcoholic drinks Sports equipment Discos or parties Clothes or footwear Records, CDs, or tapes School items Cinema Hot fast food Arcade machines Presents Leisure centre Pets Video hire	No trend found
7. Sports and activities outside school	Rugby Sailing Basketball Roller/ice skating Judo Dancing Canoeing Scrambling Hiking Fishing 5-a-side football Weight training	No trend found
8. Personal smoking	No trend found	No trend found
9. Smoking by family & friends	Close friend	Four smokers in household
10. Having a girlfriend or boyfriend	No trend found	No trend found
11. Going to discos & parties	In the last week In the last two weeks	Not in six months

The dosers' lifestyle

Some of the results in Table 1 came as a surprise. In the first place, if there was a consistent trend across the four sex/year groups, it was in almost all cases towards higher percentage values for the dosers. The only exceptions were

living at the centre of a large town, doing paid manual work or having a paper or milk round, having four smokers in the household, and going very infrequently to discos or parties. It is possible that a selection of other topics would produce the reverse effect, but the ones listed here were chosen in the expectation that asthma

Are asthmatic youngsters altering their daily lifestyle because of their condition?

Table 2. A study of Year 8 and 10 boys and girls in our 1993 Health Related Behaviour database. The table shows if all four groups showed a similar trend with respect to often wheezing when running ('wheezers'), or rarely or never wheezing ('non-wheezers'), and an aspect of their lifestyle listed here.

Aspect	Trend towards WHEEZERS	Trend towards NON-WHEEZERS
1. Home location	Centre of large town	Village
2. Ethnic group	Black Caribbean Asian Chinese	UK & European
3. Parents at home	Mother only Mother & stepfather Father & stepmother Foster parents	Mother & father
4. After-school activities	Watched videos Wrote for pleasure	Watched TV Homework Read a book Read magazines Scouts, guides, etc. Played instrument
5. Paid work	Hotel, bar, or café	Paper or milk round
6. Spending money	Sweets Alcoholic drinks Cigarettes School items Cinema Fares Crisps, etc. Hot fast food Soft drinks Arcade gambling Presents Jewellery Video hire	Magazines Sports equipment Leisure centre
7. Sports and activities outside school	Competitive cycling Roller/ice skating Rounders	Tennis Track/field events Basketball Cricket Table tennis
8. Personal smoking	Have given up Smoke regularly	Never smoked at all
9. Smoking by family & friends	Mother Father Brother Sister Relation Close friend 2-9 smokers at home	No smokers at home
10. Having a girlfriend or boyfriend	For a year or more	Not at present
11. Going to discos & parties	Never been to one	In the last month In the last six months

Note that a 'large town' (aspect 1) has a population of more than 100,000.

sufferers would exhibit generally lower rather than higher percentages than their free-breathing peers.

Instead, we find, among other things, that...

- A higher percentage of dosers than non-dosers spend money on clothes, drink, amusements, and other socially-related items.

Table 3. This is one of the tables from which the trends shown in Table 1 were identified. It will be seen that the asthma medicators are consistently higher than the non-medicators in the 'last week' and 'last 2 weeks' categories, and consistently lower in the 'not in the last 6 months' category. See the summary for aspect 11 in Table 1.

Sex	MALE				FEMALE			
	8		10		8		10	
Year Asthma medication?	No	Yes	No	Yes	No	Yes	No	Yes
<i>Last went to disco/party</i>								
In the last week	14.6	16.1	19.2	20.2	19.4	22.6	23.1	25.7
In the last 2 weeks	11.3	12.9	11.6	12.8	13.7	16.7	14.1	14.6
In the last month	23.1	24.4	22.1	19.2	28.9	28.3	26.9	26.6
In the last 6 months	24.4	23.8	22.7	23.4	24.3	21.9	22.8	21.6
Not in the last 6 months	18.8	17.1	19.5	19.0	11.3	8.8	10.8	10.2
Never been to one	7.8	5.8	4.8	5.3	2.5	1.6	2.2	1.3
<i>Valid responses</i>	<i>3794</i>	<i>521</i>	<i>4449</i>	<i>525</i>	<i>3755</i>	<i>442</i>	<i>4112</i>	<i>459</i>

Non-wheezers seem to favour outdoor paid jobs; wheezers are more likely to be doing indoor jobs.

- More dosers participate in active pursuits such as dancing, skating, 5-a-side football, and weight training.
- Dosers are more involved with pets, of which the hairy variety (which includes most examples) are supposed to encourage asthma attacks.
- A doser's close friend is more likely to smoke, which is related to the discovery that dosers are more likely to go to discos and parties.

Note that we are not looking at all asthmatic children, but simply at those who recorded taking asthma medication on at least one day during the previous week.

The wheezers' lifestyle

Table 2 displays in a similar way the trend towards wheezers or non-wheezers. Medication is not taken into account, so that some of these wheezers and non-wheezers will also be dosers.

We find that with respect to home circumstances...

- There is a smaller percentage of wheezers among the UK and European children.
- There is a greater percentage of wheezers among those children who are not living with both parents.
- Children living in a large town centre are more likely to be wheezers than those living in a village.

With respect to after-school activities, non-wheezers tend to indulge in more of these activities, but the significance of their choices is unclear.

More non-wheezers than wheezers are found

earning money outdoors from paper or milk rounds, whereas the reverse is true among workers in hotels and cafés.

The way the wheezers spend their money is evidence of a sociable lifestyle, while the non-wheezers seem to be sportier.

Smoking shows a sharp distinction between the two groups. The wheezers are more likely to be smokers or ex-smokers and to live in a smoky household, although this smoking-related wheezing may have nothing to do with asthma.

Social signals are mixed. The wheezers are more likely to have a partner, but are less likely to have been to a disco or party recently.

Interpretations

- *Asthma need not be a barrier to participation in many activities — well-managed asthma seems associated with enhanced socialising.*
- *The social and demographic factors associated with wheezing — ethnicity, non-traditional family, urban neighbourhood — are of concern. Are all three associated with deprivation?*
- *The disparities between schools with respect to the proportions of wheezing pupils that dose suggests that some screening work in schools is highly desirable.*

References

1. Balding, J. W. (1994). *Young People in 1993: the Health-Related Behaviour Questionnaire results for 29,074 pupils between the ages of 11 and 16*. Exeter University: Schools Health Education Unit.
 2. Balding, J. W. (1992). *After the survey: young people and asthma*. Exeter University: Schools Health Education Unit.